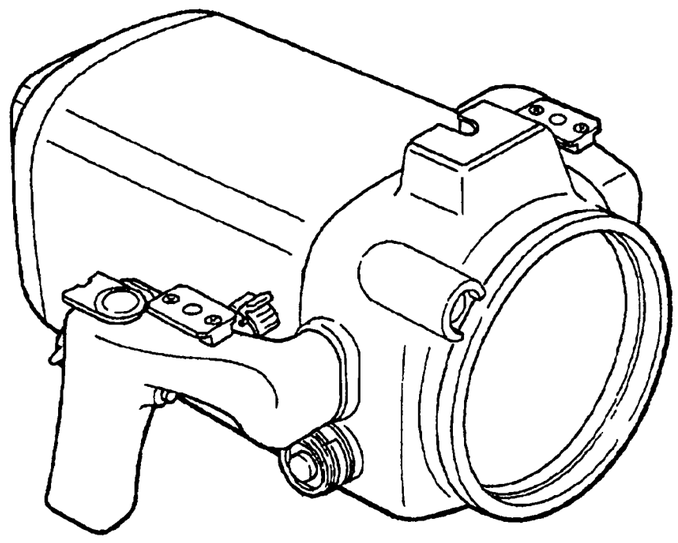
MPK-TRB

SERVICE MANUAL

US Model
AEP Model



Handycam

Difference Manual

This service manual only lists the differences with MPK-TRA2.
When repairing, please use it together with the MPK-TRA2/TRA2K service manual. (9-973-576-11)

Differences portion

- BASE ASSY, CAMERA
- There are no differences for accessories and packing materials and they are all listed.

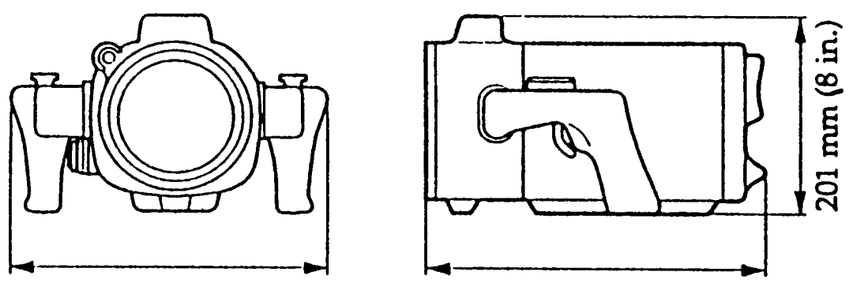
MICROFILM

MARINE PACK

SONY®

Specifications

Compatible video camera recorder
See page 2.
Material Aluminum alloy, glass, plastic
Waterproofing O-ring, 2 buckles
Usable depth Up to 75 meters (246 feet)
Underwater microphone
Condenser microphone (monaural)
Controllable function
Power on/off, recording start/stop, auto focus on/off, power zooming
Dimensions

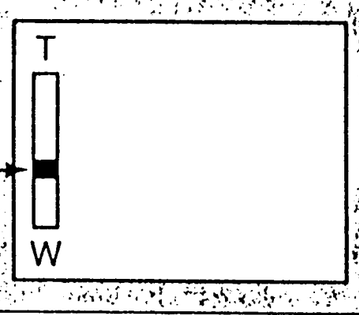


337 mm (13 3/8 in.) 327 mm (12 7/8 in.)

Mass Approx. 8 kg (17 lb 10 oz)
Supplied accessories
Adaptor (1 set)
Mounting screw plate (1)
O-rings (2)
Grease (1)
Accessory belt (1)
Recommended accessories
Underwater video light **HVL-M20, HVL-80DA**
Maintenance kit **ACC-810M**
Color filter **VF-M150**
Carrying case **LCH-M40**

Design and specifications are subject to change without notice.

If there are specks or dust in focus on the front glass of the marine pack, move the power zoom lever towards the T (telephoto) side slightly so that the zoom indicator inside the viewfinder moves towards T. (See the illustration below.)



We recommend you use a **wide-conversion lens** (not supplied) when using the marine pack.

Features

The **MPK-TRB** marine pack allows the following 8 mm video camera recorders to be used underwater.

US model

CCD-TR4*	CCD-TR5*	CCD-TR7*
CCD-TR21	CCD-TR23	CCD-TR28*
CCD-TR30	CCD-TR31*	CCD-TR33
CCD-TR36	CCD-TR40*	CCD-TR42
CCD-TR51*	CCD-TR61*	CCD-TR65*
CCD-TR70	CCD-TR71*	CCD-TR72
CCD-TR73	CCD-TR76	CCD-TR77*
CCD-TR80	CCD-TR81*	CCD-TR82
CCD-TR91*	CCD-TR93	CCD-TR100
CCD-TR101*	CCD-TR200*	CCD-TR300*
CCD-TR400	CCD-TR500*	CCD-TR600
CCD-TR700*		
CCD-TRV30	CCD-TRV40	CCD-TRV70
CCD-FX228	CCD-FX230	CCD-FX240
CCD-FX310	CCD-FX311	CCD-FX330
CCD-FX340	CCD-FX410	CCD-FX411
CCD-FX420	CCD-FX425	CCD-FX430
CCD-FX435	CCD-FX510	CCD-FX511
CCD-FX520	CCD-FX525	CCD-FX530
CCD-FX620*	CCD-FX630	CCD-FX640
CCD-FX710*	CCD-FX730V	

(The illustrations are of the **CCD-TR101.**)

AEP model

CCD-TR1/TR1E*	CCD-TR3/TR3E*
CCD-TR8/TR8E*	CCD-TR18E*
CCD-TR45/TR45E*	CCD-TR55/TR55E*
CCD-TR75/TR75E*	CCD-TR105E*
CCD-TR202E	CCD-TR303/TR303E*
CCD-TR305/TR305E*	CCD-TR323/TR323E*
CCD-TR350/TR350E	CCD-TR353/TR353E*
CCD-TR360*	CCD-TR380/TR380E
CCD-TR385E	CCD-TR405*
CCD-TR430	CCD-TR450E
CCD-TR460	CCD-TR470E*
CCD-TR480E	CCD-TR485E
CCD-TR530E	CCD-TR550/TR550E
CCD-TR560	CCD-TR565E
CCD-TR570E	CCD-TR580E
CCD-TR606E*	CCD-TR636*
CCD-TR650E	CCD-TR670/TR670E
CCD-TR680E	CCD-TR705/TR705E*
CCD-TR707E*	CCD-TR750/TR750E
CCD-TR780E	CCD-TR805/TR805E*
CCD-TR880/TR880E	CCD-TR2000/TR2000E*
CCD-TRV30/TRV30E	CCD-TRV70/TRV70E
CCD-FX200/FX200E/FX200EA	
CCD-FX230BR	CCD-FX270E/FX270EA
CCD-FX280E	CCD-FX300/FX300E
CCD-FX400/FX400E	CCD-FX470
CCD-FX500/FX500E	CCD-FX600*
CCD-FX700/FX700E*	CCD-FX730V/FX730VE

(The illustrations are of the CCD-TR805E.)

- Recording at a depth of 75 meters (246 feet) is possible.
- The following operations can be performed underwater.
  Power on/off
  Auto focusing on/off (Only models marked with *)
  Recording start/stop
  Power zooming

This section is extracted from instruction manual.

Precautions

On the video camera recorder

Take care not to expose the equipment to salty air. Do not drip water on the equipment.

- Do not open the marine pack while at sea or at the seaside. Preparations such as installing and checking the equipment should be made in a place with low humidity and no salty air.
- When a video camera recorder is to be used near the sea for a long time, we recommend that it be checked periodically by a Sony dealer.
- If the equipment becomes wet, take it immediately to the nearest Sony dealer for preventive maintenance.

On power source for the video camera recorder

Use the **NP-77H**, **NP-77HD**, **NP-S88A**, **NP-90** and **NP-90D** battery packs. For the **CCD-TR200/TR300/TR500** and **CCD-TR1E/TR3E/TR8E/TR18E**, use the **NP-500**, **NP-500H** and **NP-520**. We recommend you use these battery packs as much as possible.

On the marine pack

- If you open and joint the front and rear shells in a place with high temperature and high humidity, moisture condensation may occur when you put the marine pack in the water causing the front glass to fog.
- The waterproof integrity of the marine pack is maintained by the O-ring, and the groove and surface where it touches. Be especially careful not to damage or deform that area.
- Do not leave the marine pack under direct sunlight for a long period of time, otherwise the temperature in the marine pack may rise and the equipment inside may be damaged.
- If you cannot avoid leaving the marine pack under direct sunlight, be sure to cover the marine pack with a towel or other protection.
- Do not throw the marine pack into the water. Lower it gently into the water.

On recording underwater

- Check that the equipment operates correctly and there is no water leak at a depth of about 3 feet (one meter) before you dive deeper.
- Be sure to follow the safety rules for diving such as diving period and depth.
- Remove the bubbles from the outside of the front glass.

Sony does not accept liability for damage to the video camera recorder, battery, etc. in the marine pack and for the cost of recording if water leak occurs caused by incorrect operation.

On maintenance

After recording in the sea, submerge the marine pack with the buckles tightly fastened in fresh water for a while to remove the sea water. Then rinse it with fresh water and dry it with a soft cloth.

- Every time after you use the marine pack and the video camera recorder underwater, clean the video camera recorder and the inside of the marine pack with a dry soft cloth. Do not use any type of solvent, such as alcohol or benzine for cleaning, as this might damage the finish.
- When you store the marine pack, grease the O-ring, put it in the groove correctly. Joint the front and rear shells and place it in a cool place without fastening the buckles. Avoid storing the marine pack in a hot or very cold place, in a place subject to direct sunlight or excessive dust, or together with naphthalene or camphor as. These will damage the marine pack.

On transportation

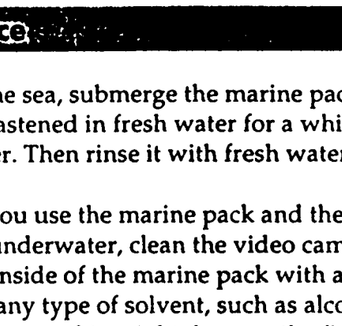
- To transport the marine pack, be sure to remove the video camera recorder from the marine pack.
- To transport the marine pack by air or by car, use a marine pack carrying case (not supplied).

To remove the weight

You can remove the weight in the rear shell.

1 **Pull out the hexagonal wrench.**

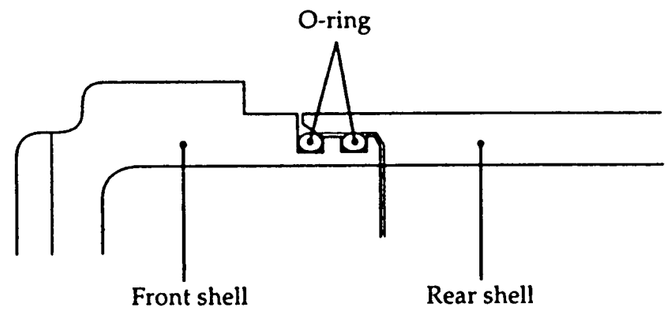
2 **Remove the bolt using the hexagonal wrench.**



When you use the marine pack, replace the weight as it was.

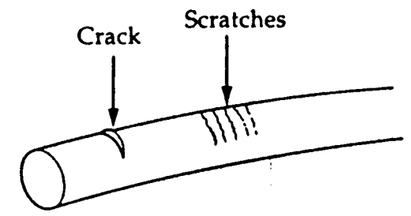
Notes on the O-ring

The O-ring assures the waterproof function of the marine pack. To maintain waterproof integrity, use it correctly. Incorrect handling may cause water to leak in.



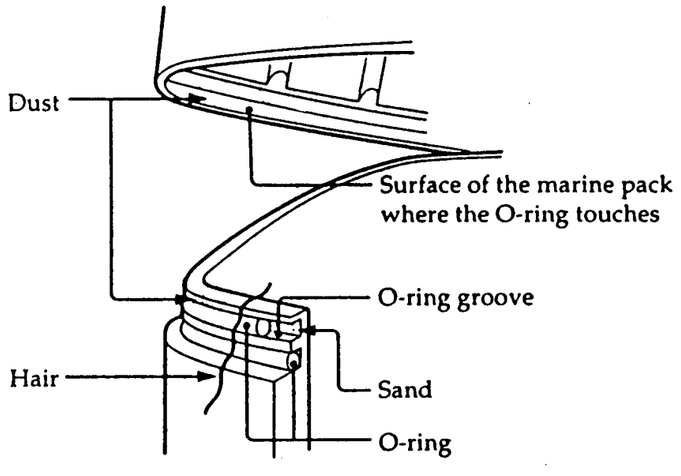
Check that there are no scratches or cracks.

Scratches or cracks on the O-ring may cause water to leak in. If the O-ring is damaged in this way, replace it with a new one. Do not remove the O-ring from the groove with a metal tool or a tool with a sharp point.



Remove any dust, sand or hair from the O-ring.

Make sure there is no dust, sand or hair on the O-ring, in the groove, or on the surface of the marine pack where the O-ring touches. If there is, clean them completely, or the O-ring and the surface of the marine pack may be damaged and water may leak in.

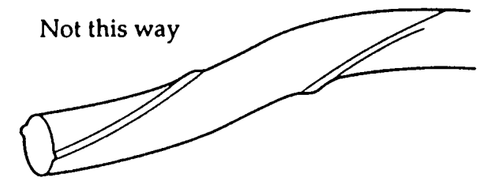


Grease the O-ring.

The grease protects the O-ring from wear.
Check that there are no cracks or dust on the O-ring, then grease it using your finger. While greasing, double check that there are no cracks or dust.
Never use cloth or paper to apply grease because the fibers may cling.
Do not use any type of grease other then the supplied one, or it may damage the O-ring.

Do not twist the O-ring.

Put the O-ring in the groove evenly. Never twist it.



Do not pinch the O-ring with the marine pack.

When jointing the front and rear shells, take care not to pinch the O-ring between the front and rear shells. If this happens, not only will the O-ring be damaged, but water may leak in.

Storage

Put the supplied spare O-rings in the original carton and store it in a cool place.

- Do not expose the O-ring to direct sunlight.
- Do not place a heavy object on the O-ring.
- Do not fold the O-ring.

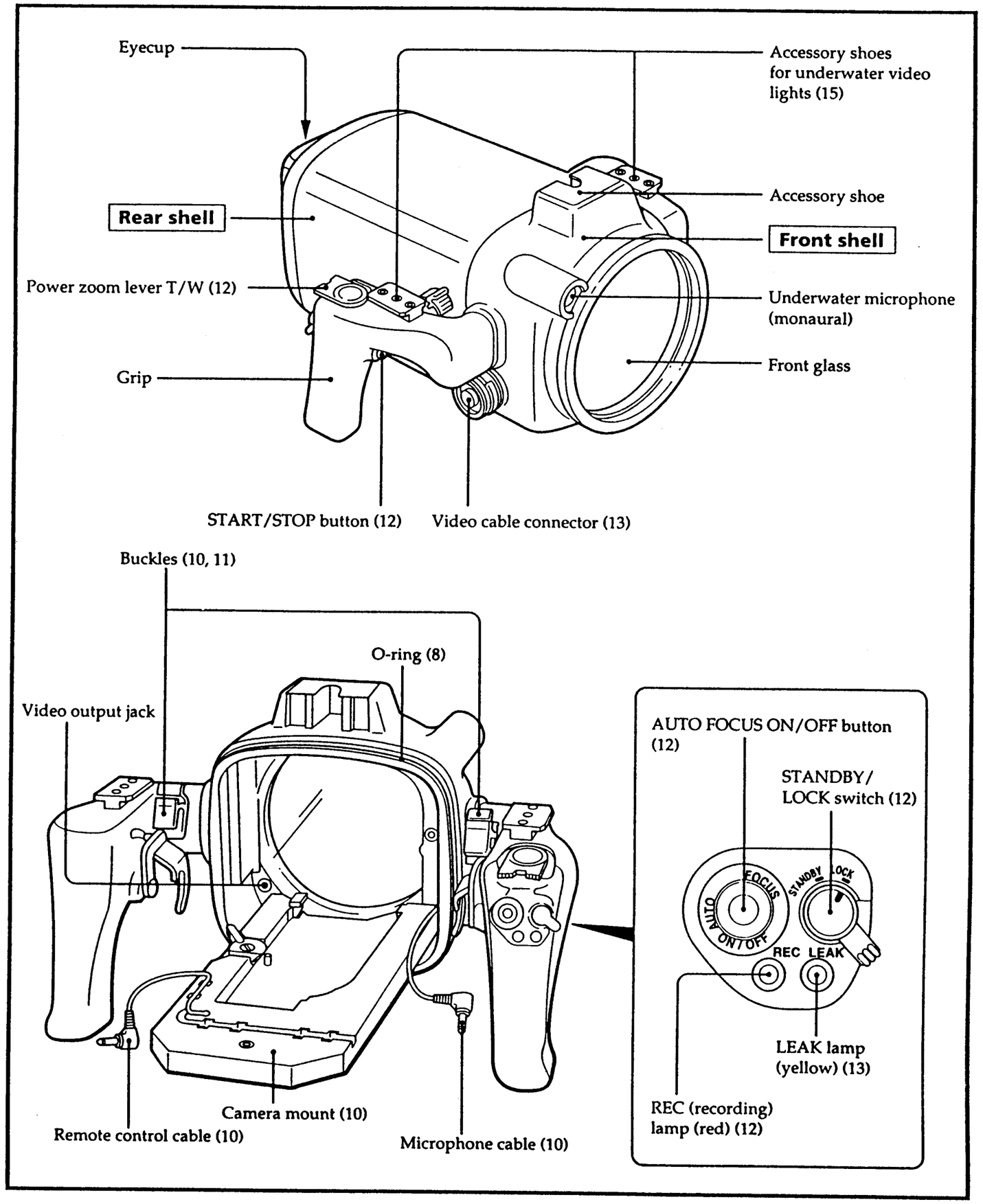
Useful life of the O-ring.

Depending upon the maintenance and the length of use, we recommend changing the O-ring every one or two years.
Use the Sony **ACC-810M** marine pack maintenance kit (not supplied) for replacement.

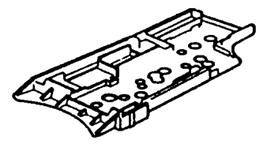
MPK-TRB

Labeling the parts and controls

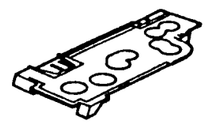
• For the use of each part or control, see the pages indicated in parenthesis.



Supplied accessories

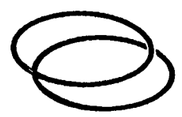


Adaptor A (1)



Adaptor B (1)

Mounting screw plate (1)



O-rings (2)

Grease (1)

Accessory belt (1)

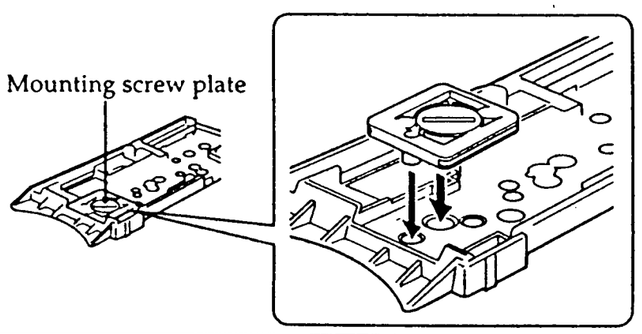
Position of the adaptor and the remote control cable

The position of the adaptor and the remote control cable depends on the model of the video camera recorder. Check the position for the video camera recorder you use.

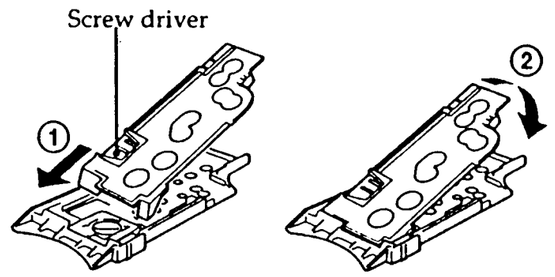
Mounting instructions are explained in "Attaching the video camera recorder to the marine pack" on page **9**.

Position of the mounting screw plate on the adaptor

A Put the mounting screw plate on the number of adaptor A depending upon the model of video camera recorder.



B Attach the adaptor B to the adaptor A.



US model

Video camera recorder CCD	Position of the mounting screw plate on the adaptor	
	Without a wide-conversion lens	With a wide-conversion lens
TR91	8	9
TR700		
TR23	1	2
TR33		
TR42		
TR70/TR72		
TR80/TR82		
TR400		
TR36	1	2
TR73/TR76		
TR93		
TR100		
TR600		
TR200	3	
TR300		
TR500		
TR4/TR5/TR7	7	
TR51		
TR71/TR77		
TR81		

Video camera recorder CCD	Position of the mounting screw plate on the adaptor	
	Without a wide-conversion lens	With a wide-conversion lens
TRV30	1	2
TRV40		
TRV70		
TR21/TR28	8	
TR30/TR31		
TR40		
TR61/TR65		
TR101		
FX228/FX230/FX240	5	
FX310/FX311		
FX330/FX340		
FX410/FX411		
FX420/FX425		
FX430/FX435		
FX510/FX511		
FX520/FX525/FX530		
FX620		
FX630/FX640		
FX710		
FX730V	3	

AEP model

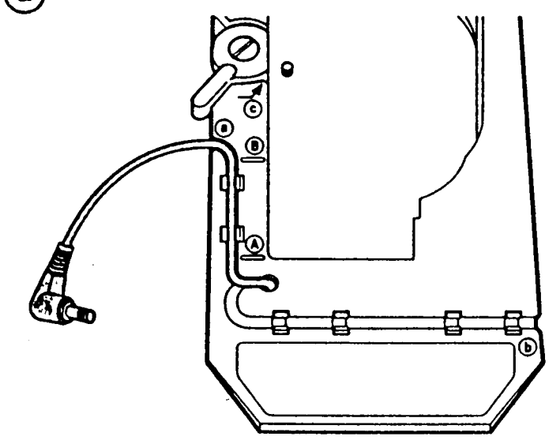
Video camera recorder CCD	Position of the mounting screw plate on the adaptor	
	Without a wide-conversion lens	With a wide-conversion lens
TR606E	8	9
TR636		
TR2000/TR2000E		
TR380/TR380E	1	2
TR385E		
TR430/TR460		
TR485E		
TR45/TR45E	7	
TR55/TR55E		
TR75/TR75E		
TR105E		
TR305/TR305E		
TR405		
TR705/TR705E		
TR707E		
TR202E	8	
TR303/TR303E		
TR323/TR323E		
TR350/TR350E		
TR353/TR353E		
TR360		
TR450E/TR470E		
TR805/TR805E		
TR1/TR1E/TR3/TR3E	3	
TR8/TR8E/TR18E		

Video camera recorder CCD	Position of the mounting screw plate on the adaptor	
	Without a wide-conversion lens	With a wide-conversion lens
TR530E	1	2
TR550/TR550E		
TR565E		
TR570E		
TR650E		
TR750/TR750E		
TR480E	1	2
TR560		
TR580E		
TR670/TR670E		
TR680E/TR780E		
TR880/TR880E		
TRV30/TRV30E		
TRV70/TRV70E		
FX200/FX200E/FX200EA	5	
FX230BR		
FX270E/FX270EA		
FX280E		
FX300/FX300E		
FX400/FX400E		
FX470		
FX600		
FX500/FX500E		
FX700/FX700E		
FX730V/FX730VE	3	

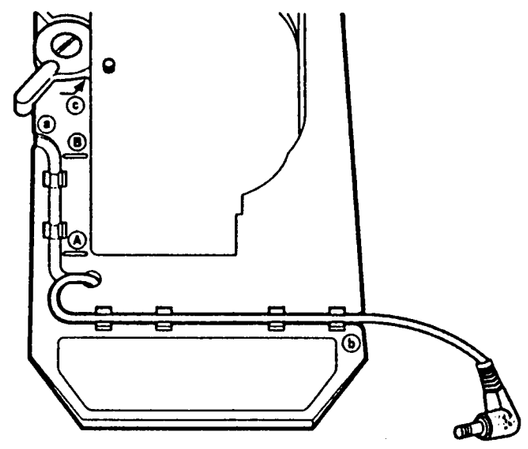
Groove to install the remote control cable

Install the remote control cable according to one of the diagrams below.

ⓐ

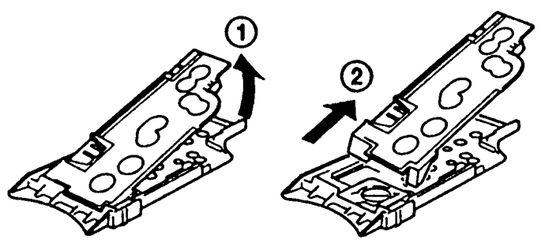


ⓑ



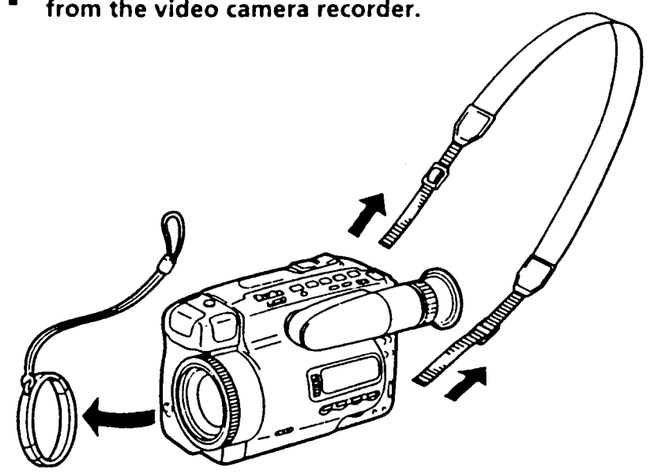
Detach the adaptor

Detach the adaptor B from the adaptor A.

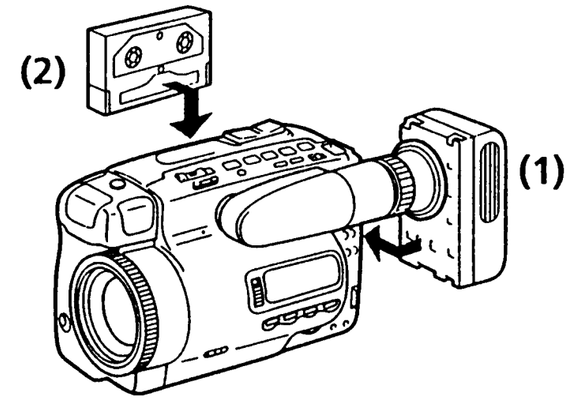


Attaching the video camera recorder to the marine pack

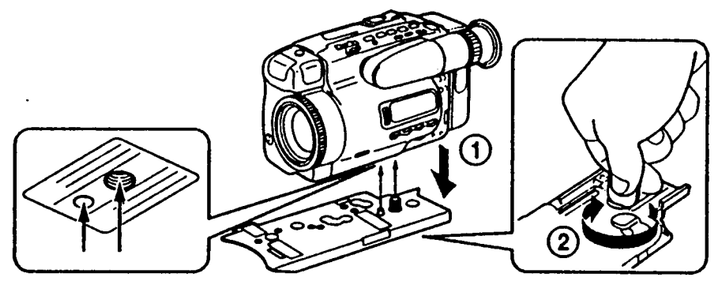
1 **Remove the lens cap, shoulder strap, filter, etc., from the video camera recorder.**



2 **Attach a charged battery pack (1) and a video cassette (2).**
If you use a wide conversion lens (not supplied), attach it as well (see page 15).

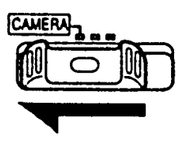


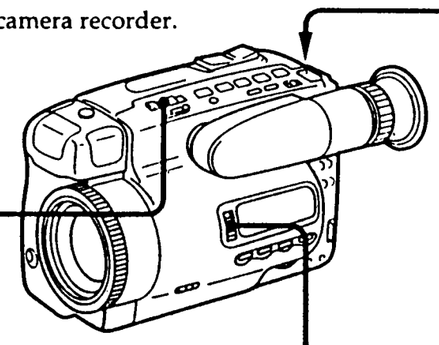
3 **Attach the adaptor to the video camera recorder.**
Check that the position of the mounting screw plate is correct. (See pages **6** and **7**.)



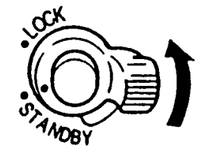
4 **Adjust the video camera recorder.**
Refer to the operation manual of your video camera recorder.
Do not pull out the viewfinder.

1 Set the POWER switch to CAMERA.

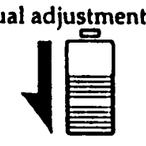




2 Set the STANDBY switch to STANDBY.



3 Release the automatic adjustment mode and set to manual adjustment mode.



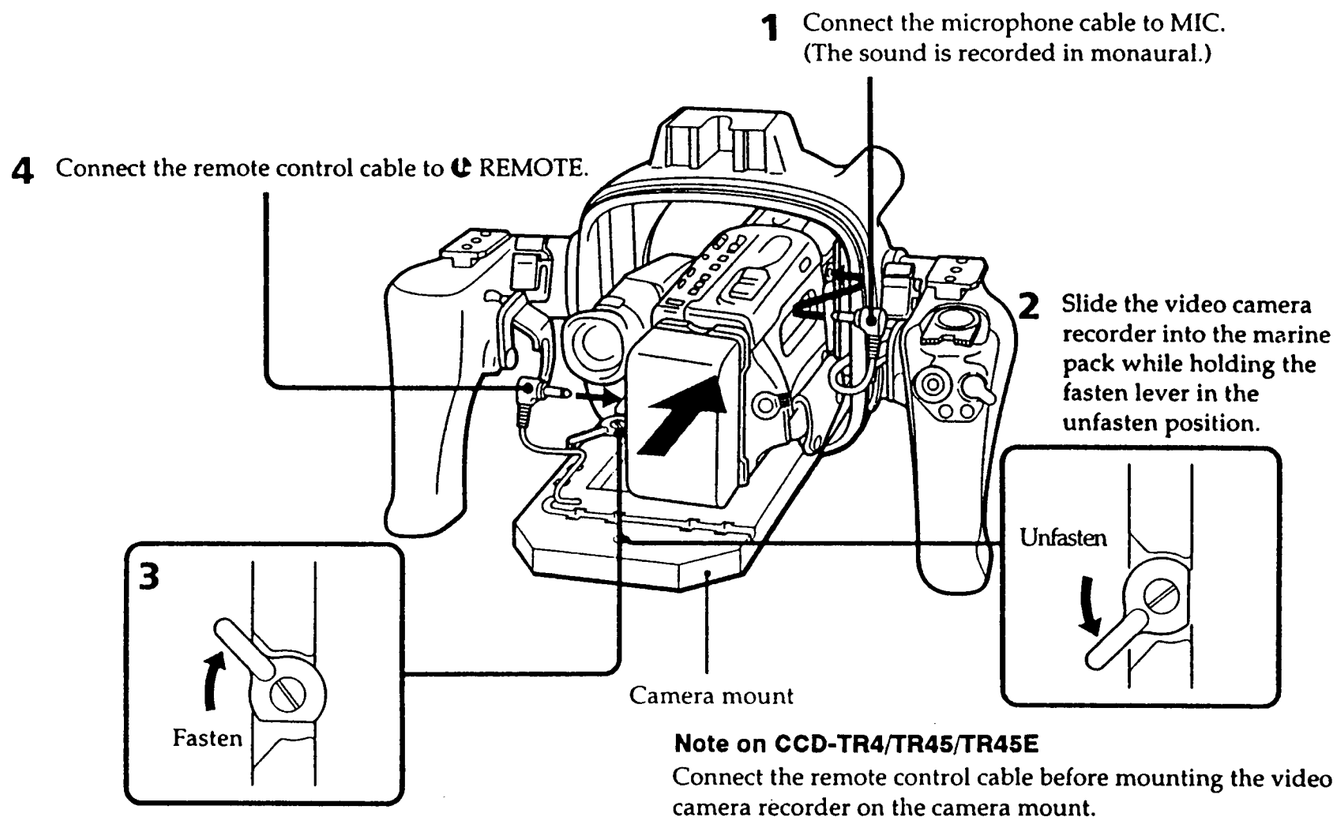
The following adjustments are needed when your video camera recorder has the corresponding function.
Refer to the operation manual of the video camera recorder for details.

White balance	Normally set to ☀ (outdoor). Set to 🔆 (indoor) for night diving.
Shutter speed	Set where no indicator appears.
Program AE	Set where no indicator appears.
Brightness	Turn off the indicator.

On some video camera recorder models, you cannot adjust the focus with the button on the marine pack. Set the focus to auto focus mode (see page 3).

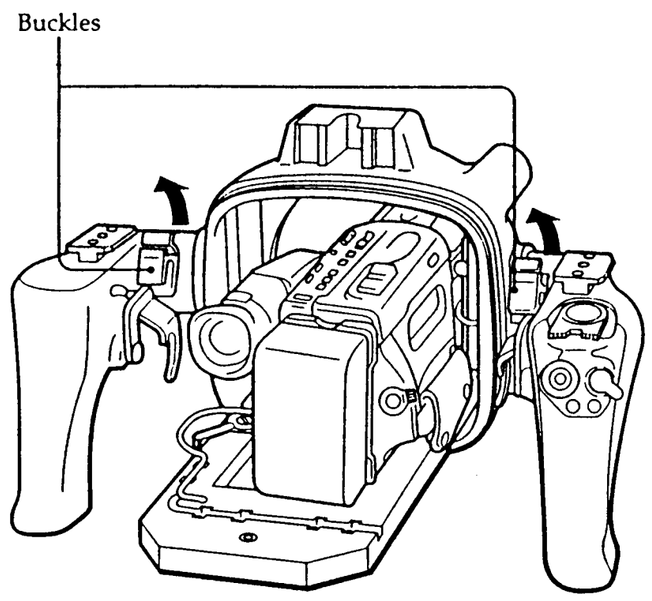
(continued)

5 **Attach the video camera recorder to the marine pack.**
Check the position of the adaptor. (See pages **6** and **7**.)

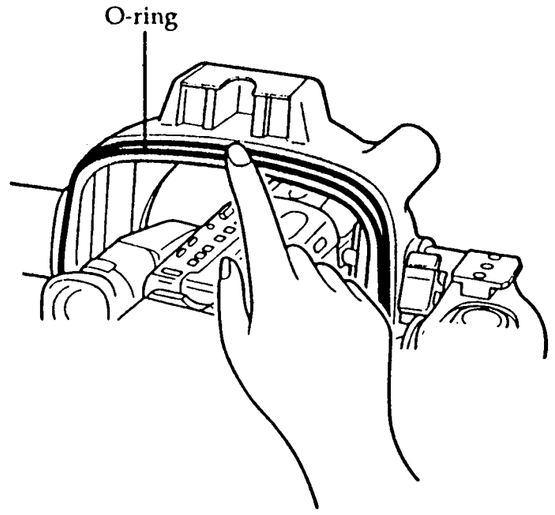

1 Connect the microphone cable to MIC. (The sound is recorded in monaural.)
4 Connect the remote control cable to REMOTE.
2 Slide the video camera recorder into the marine pack while holding the fasten lever in the unfasten position.
3
Fasten
Unfasten
Camera mount

Note on CCD-TR4/TR45/TR45E
Connect the remote control cable before mounting the video camera recorder on the camera mount.

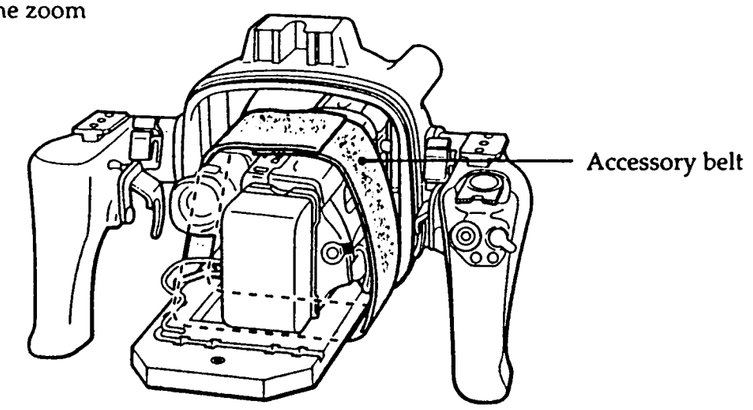
6 **Raise the buckles until they stop.**



Check the O-ring and grease it slightly.

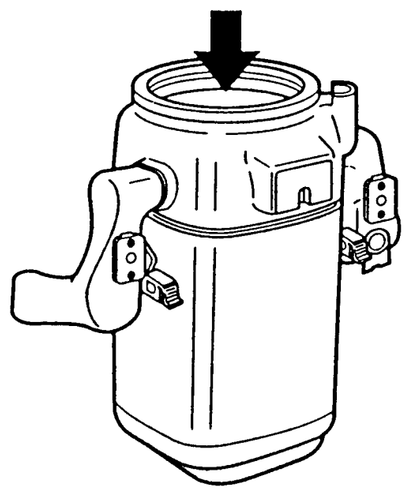


7 **Fasten the video camera recorder with the accessory belt.**
When you fasten the video camera recorder with accessory belt, take care not to touch the zoom button.

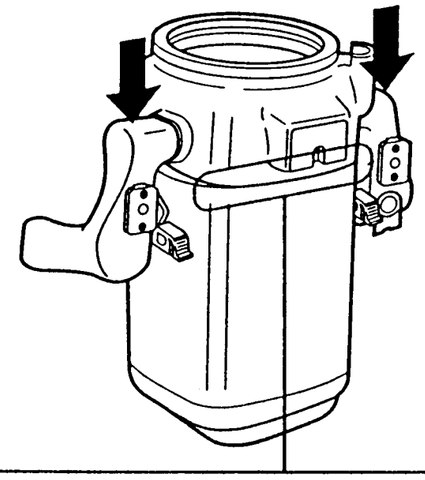


8 **Attach the front shell to the rear shell.**

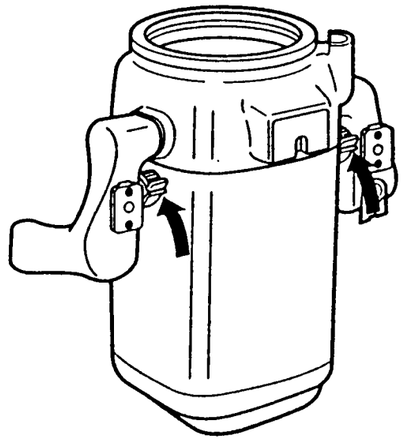
1 Put the front shell on the rear shell.

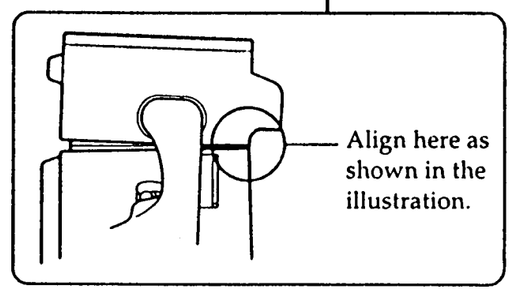


2 Press the top of both grips strongly.



3 Lower both buckles at the same time until they are locked. You will hear a click.

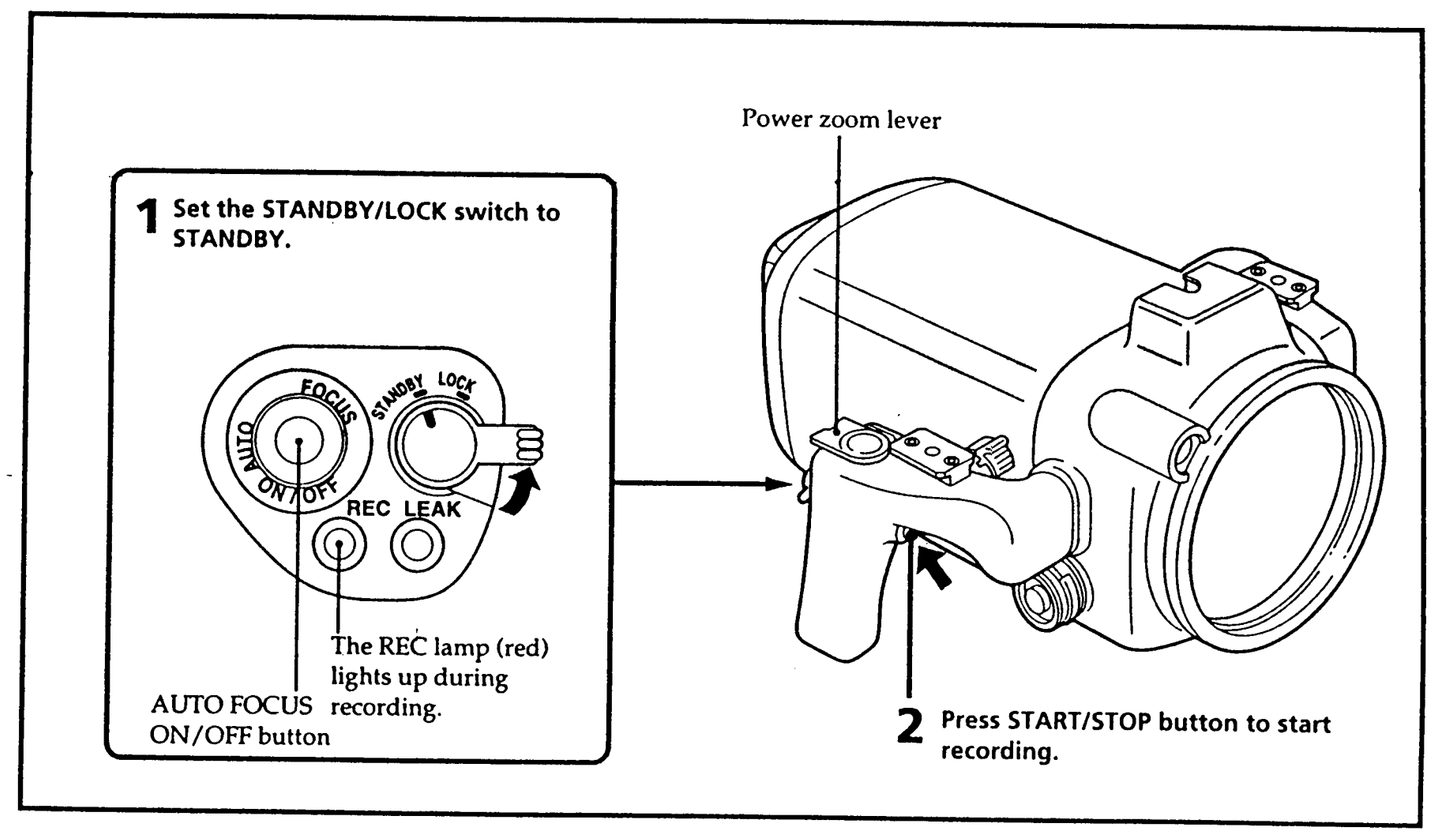




Now you are ready for underwater recording.

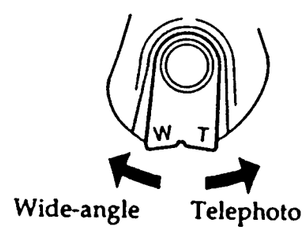
Set the STANDBY/LOCK switch of the marine pack to LOCK.
If you set it to STANDBY, the battery may be used up before recording.

Recording



To zoom

Slide the power zoom lever towards T for telephoto (subject appears closer) or W for wide-angle (subject appears farther away). The zooming speed can be changed on some video camera recorder models from a slow speed to faster by sliding the zooming lever a little more.



When you set the power zoom lever to the full wide-angle position (macro), specks or bubbles on the front glass may come into focus. In this case, slide the power zoom lever a little towards T and return towards W.

On some video camera recorder models, you may feel uncomfortable watching the complete wide picture in the viewfinder when you set up your video camera recorder in the marine pack. This is because there is a gap between the marine pack and the viewfinder.

To keep a subject in focus

After you focus on a subject, press the AUTO FOCUS ON/OFF button to set the video camera recorder to manual focus mode.
Even if fish swim between the video camera recorder and the subject, you can still keep the subject in focus.

Note
On some video camera recorder models, the AUTO FOCUS ON/OFF button is not operative.
Set the video camera recorder to auto focus mode (see page 3).

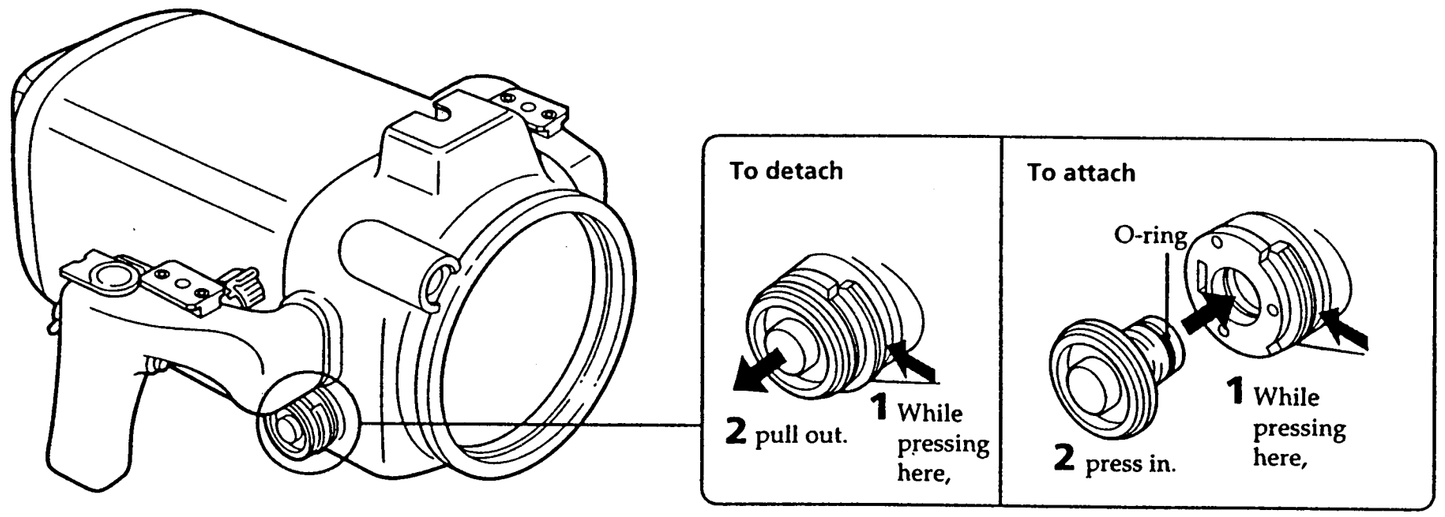
To stop recording

Press the START/STOP button.

To attach/detach the lid of the video cable connector

A video cable connector is provided so that video equipment can be connected to the marine pack in the future.

When you reattach the lid, grease the O-ring of the lid before inserting it into the connector.



Note

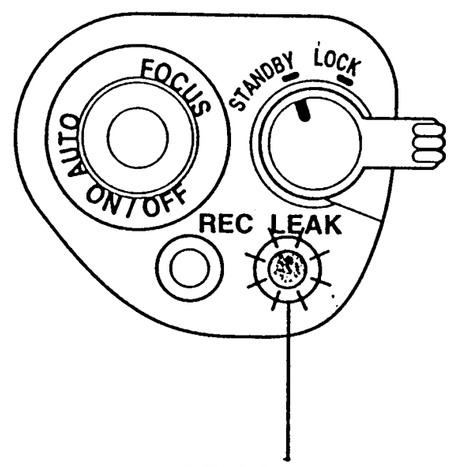
Do not remove the lid underwater.

When the LEAK lamp flashes

If water happens to leak in, the LEAK lamp (yellow) flashes.

In such a case, remove the marine pack from the water as soon as possible, keeping it horizontal. Be sure to surface following the safety rules for diving.
Dry the marine pack with a soft cloth and then open it.
To switch off the lamp, disconnect the remote control cable.
Check the cause of the leak.

If the video camera recorder is wet, take it to the nearest Sony dealer immediately.



Removing the video camera recorder

Before opening the marine pack, rinse it with fresh water and dry with a soft cloth.

Note

When you open the marine pack, follow this procedure to prevent the video camera recorder from getting wet.

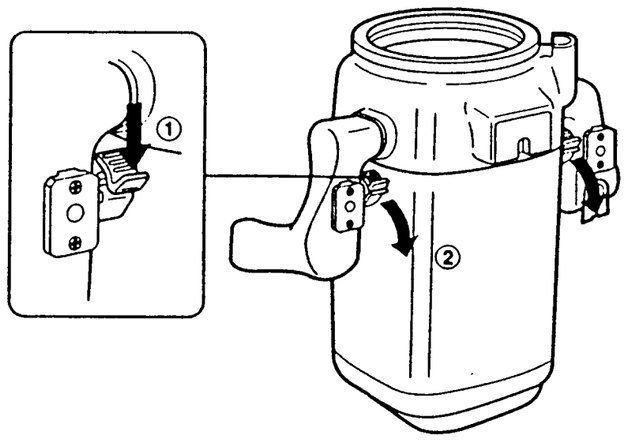
- Dry the marine pack well.
- Wipe off any water between the front and rear shells with a towel.
- Make sure you are dry. Take care that no water drips from your wet suit.

1 **Remove the accessories.**

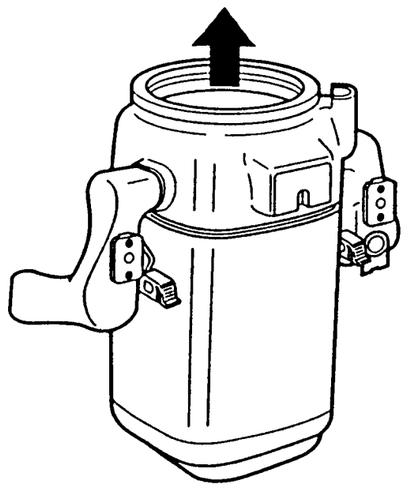
2 **Open the marine pack.**

1 Before opening the marine pack, rinse it with fresh water and dry with a soft cloth.

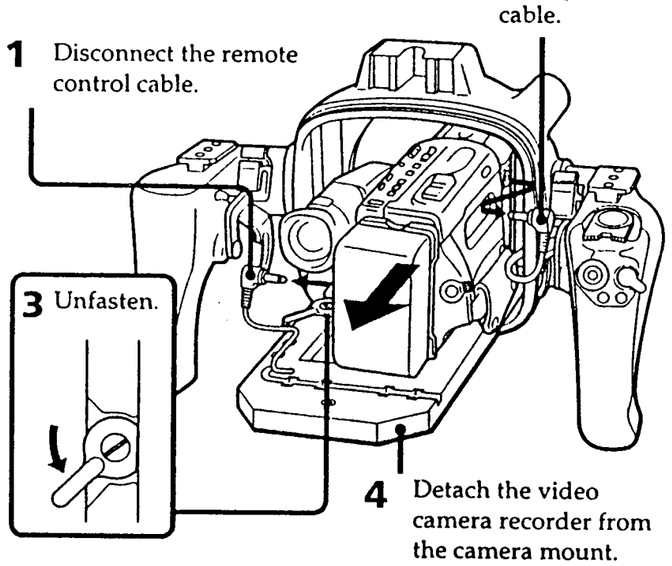
2 Unfasten both buckles.



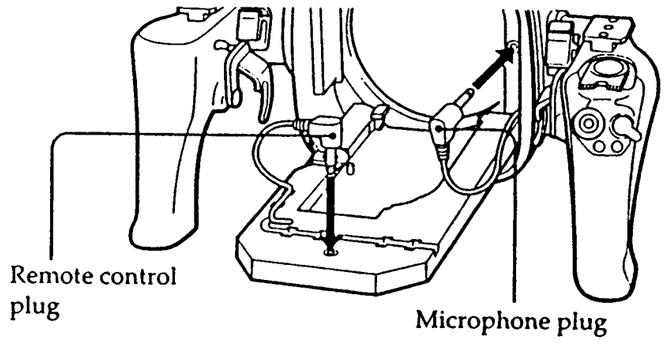
3 Remove the front shell.



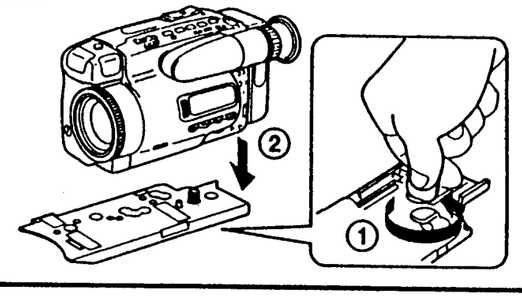
3 **Take the video camera recorder out of the front shell.**


2 Disconnect the microphone cable.
1 Disconnect the remote control cable.
3 Unfasten.
4 Detach the video camera recorder from the camera mount.

4 **Insert the remote control plug and the microphone plug where they were.**



5 **Remove the adaptor from the video camera recorder.**



Underwater recording

Recording underwater is different from recording on land because it is affected by the clarity and depth of the water and the light conditions. The following are hints for good recording underwater.

Color characteristics underwater

Water absorbs light, especially red light, so that objects in deep water are seen as bluish. The color of objects is affected by the clarity of the water.
To record in natural color, use the Sony **VF-M150** color filter (not supplied).

Best time for recording

The best recording time is from 10:00 a.m. to 2:00 p.m. When the sun is high in the sky, optimum results can be obtained.

Subject size underwater

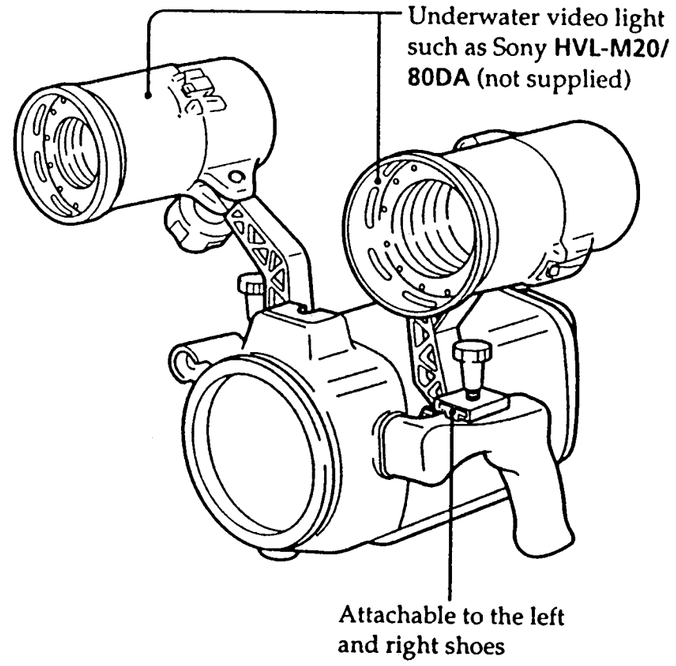
Since the refractive index underwater is higher than that in air, an object appears 1/4 more closer, and therefore larger. This phenomenon affects the lens on the video camera recorder as well as the human eye. Using a **wide-conversion lens** is recommended. (You cannot attach a wide conversion lens to a **CCD-FX** model for use with this marine pack.)

Camera work in slow and stable motion

When recording, keep your body stable.
An unstable shot will be magnified on the TV screen. Move the video camera recording as slowly as possible. As most of the object underwater move, you can record a good programme without moving the video camera recorder.

Underwater video light

In deep water or under rocks where direct sunlight does not reach, recording with an underwater video light is recommended.
To record at night, use a powerful underwater video light.

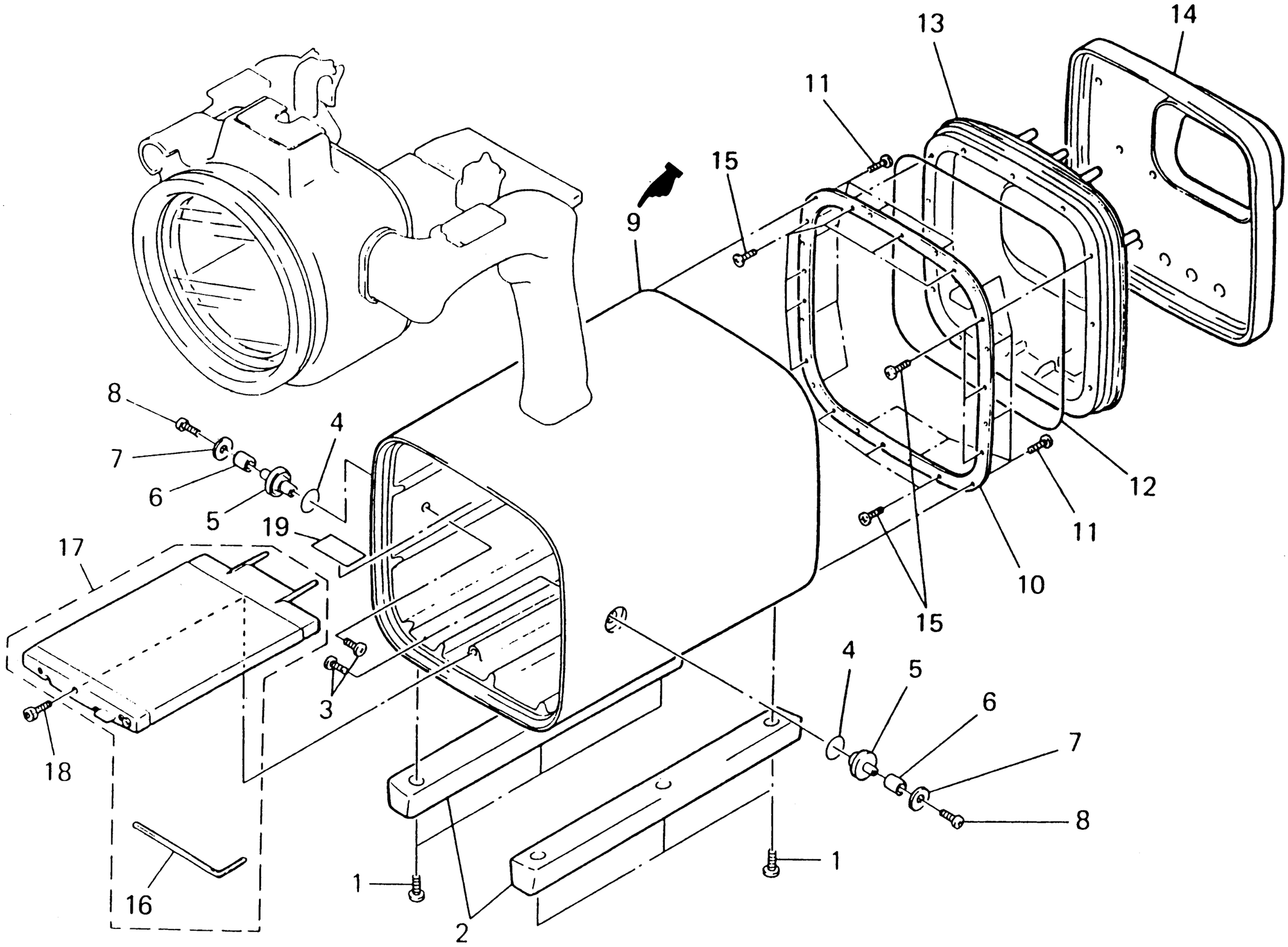


SECTION 3
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

3-1. MAIN SECTION-1 (Service manual page 17)

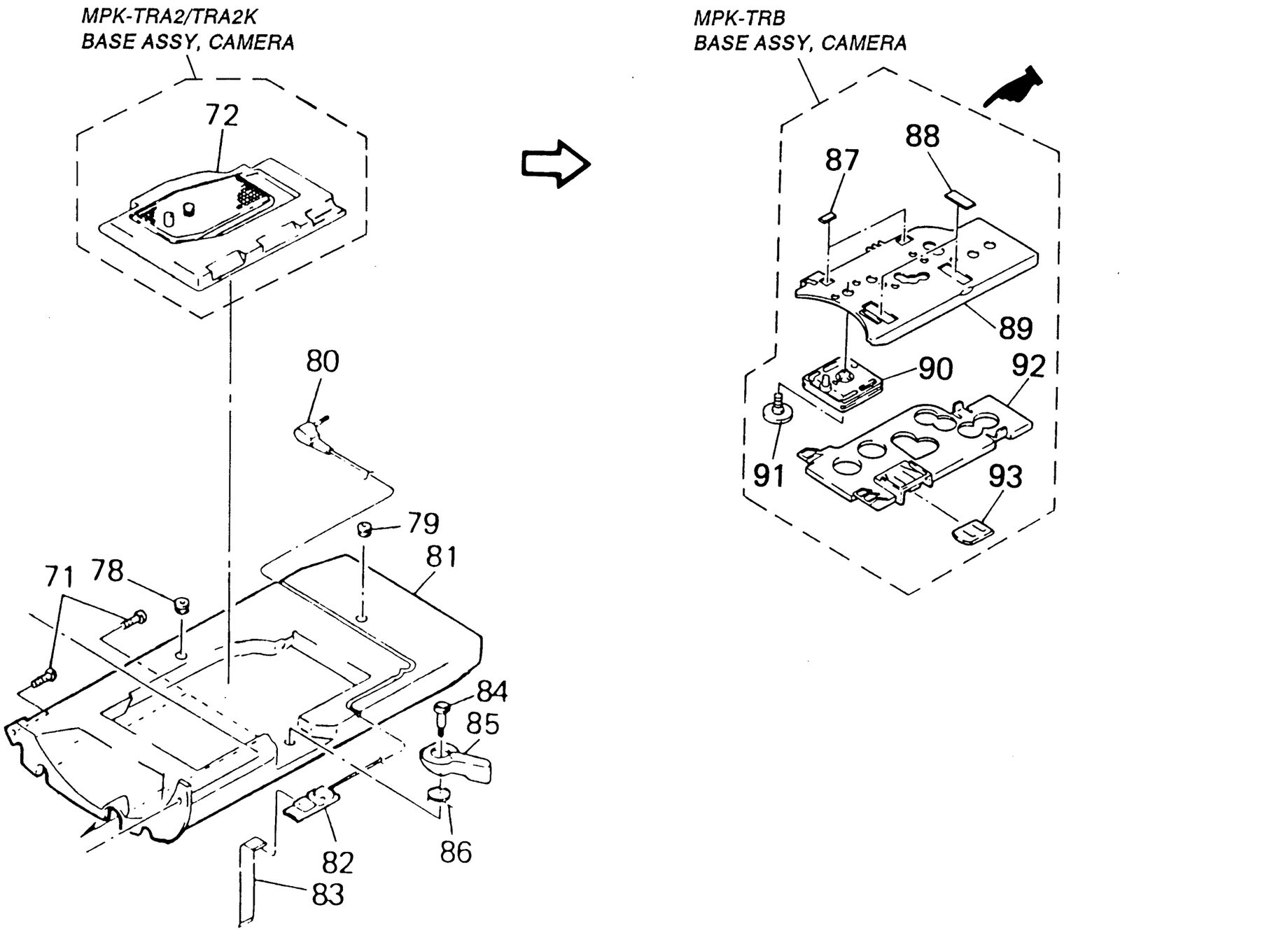
☛ : **Differences portion**



Ref.No.	Part No.	Description	Remark
1	3-950-861-01	SCREW (M4X6)	
2	3-952-922-01	GUIDE, PIPE	
3	3-951-373-01	SCREW (M5X6), PLUS (BV)	
4	3-950-858-01	RING (P-9), O	
5	3-950-859-01	PIN, LOCK	
6	3-952-626-01	COLLAR, LOCK PIN	
7	3-952-627-01	WASHER	
8	3-952-629-01	SCREW (M3X5)	
9	A-7009-104-A	PIPE BLOCK ASSY, MIDWAY ☛	Note.
* 10	3-952-920-01	PLATE, FIXED, REAR COVER	
11	3-950-857-01	SCREW (M2X5)	
12	3-952-928-01	RING (GS-165), O	
13	3-952-917-01	COVER, REAR	
14	3-952-918-01	PROTECTOR, REAR	
15	2-115-925-01	SCREW (2) (M2X5), TAPPING	
16	3-952-942-01	WRENCH, HEXAGON	
17	X-3942-700-1	WEIGHT ASSY, BALANCE	
18	2-186-308-11	BOLT (M4X15), HOLE, HEXAGON	
19	3-953-857-01	LABEL, CAUTION	

Note : This part is a common part for MPK-TRA/TRA2/TRB (for service use).

3-2. MAIN SECTION-2 (Service manual page 18)



Ref.No.	Part No.	Description	Remark
87	3-964-844-01	SHEET, PROTECTION	☚
88	3-964-843-01	SHEET, PROTECTION	☚
89	3-964-846-01	BASE	☚
90	3-960-030-01	BASE. SLIDE	☚
91	3-960-767-01	SCREW, CAMERA FITTING	☚
92	3-964-845-01	COVER, BASE	☚
93	3-953-086-01	BRACKET	☚

ELECTRICAL PARTS LIST

(Service manual page 21)

Ref.No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		******	
	2-115-921-01	GREASE	
	3-681-190-01	SHEET (LARGE), PROTECTION	
	3-798-967-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (AEP)	
	3-798-967-21	MANUAL, INSTRUCTION (ENGLISH) (US)	
	3-798-967-31	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP)	
	3-798-967-41	MANUAL, INSTRUCTION (ARABIC, CHINESE) (AEP)	
	3-952-928-01	RING (GS-165), O	
*	3-953-232-01	CUSHION (UPPER)	
*	3-953-233-01	CUSHION (LOWER)	
*	3-952-980-21	INDIVIDUAL CARTON	

MPK-TRB

9-973-741-11

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Personal A&V Products Div.

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